Importation of *Petroselinum crispum* (Mill) Nyman ex A. W. Hill (Parsley) as Leaves and Stems From EL Salvador and Honduras into the Continental United States

A Qualitative, Pathway-Initiated Risk Assessment

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A. Introduction

This risk assessment (RA) was prepared for the Animal and Plant Health Inspection Service, (APHIS), U. S. Department of Agriculture (USDA) under Purchase Order Number 43-6395-0-2185 (dated June 27, 2000). The project was supported by the U. S. Agency for International Development under Project Hurricane Mitch Economic Initiative.

The purpose of this RA is to examine pest risks associated with the importation into the United States of *Petroselinum crispum* (parsley) as leaves and stems from El Salvador and Honduras.

The RA is a qualitative one in which risk is expressed in terms such as high and low rather than in numerical terms such as probabilities or frequencies. The details of the methodology and rating criteria can be found in: Pathway-Initiated Pest Risk Assessments: Guidelines for Qualitative Assessments, Version 5.0 (USDA, 2000a).

Regional and international plant protection organizations, e.g. North American Plant Protection Organization (NAPPO) and the International Plant Protection Convention (IPPC) administered by the Food and Agriculture Organization (FAO) of the United Nations provide guidance for conducting pest risk analyses. The methods used to initiate, conduct, and report this RA are consistent with guidelines provided by NAPPO and FAO. Our use of biological and phytosanitary terms conforms to the Definitions and Abbreviations (Introduction Section) in International Standards for Phytosanitary Measures, Section 1-Import Regulations: Guidelines for Pest Risk Analysis (FAO, 1996).

The FAO guidelines describe three stages of pest risk analysis: Stage 1 (initiation), Stage 2 (risk assessment), and Stage 3 (risk management). This document satisfies the requirements of FAO Stages 1 and 2.

B. Risk Assessment

1. Initiating Event: Proposed Action

This RA is commodity based and therefore "pathway-initiated." It was conducted in response to a request for the USDA to authorize the importation of a particular commodity presenting a potential plant pest risk. The importation into the United States of fresh parsley (*Petroselinum crispum*) leaves and stems as a commodity from El Salvador and Honduras is a potential pathway for the introduction of plant pests. The regulatory authority for the importation of fruits and vegetables from foreign sources into the United States may be found in the Code of Federal Regulations (7CFR§319.56).

2. Assessment of Weediness Potential of *Petroselinum crispum* (parsley)

The results of weediness screening for *Petroselinum crispum* from El Salvador and Honduras (Table 1) did not prompt a pest-initiated risk assessment.

Table 1. Process for Determining Weediness Potential of the Commodity

Commodity: Fresh leaves and stems of *Petroselinum crispum* (Mill) Nyman ex A. Hill (parsley) (Apiaceae) for consumption.

Phase 1: The species is widely grown in gardens and commercially in the United States.

Phase 2: Is the species listed in**:**

NO Geographical Atlas of World Weeds (Holm *et al.*, 1979).
NO World's Worst Weeds (Holm *et al.*, 1977).
NO Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act (Gunn and Ritchie, 1982).
NO Economically Important Foreign Weeds (Reed, 1977).
NO Composite List of Weeds (Weed Science Society of America, 1989).
NO World Weeds (Holm, *et al.,* 1997).
NO Is there any literature reference indicating weediness (*e.g.*, AGRICOLA, CAB, Biological Abstracts, AGRIS; search on "species name" combined with "weed").

Phase 3: Conclusion: The species is widely grown in the United States (USDA, 2000b) both commercially and in home gardens, Seed is readily available from garden centers and seed suppliers. The weediness potential of this importation is negligible.

3. Previous Risk Assessments, Decision History and Interception Records for *Petroselinum crispum* (parsley) from El Salvador and Honduras

Decision History (APHIS, 2000a):
None.

Interception records for this commodity from El Salvador and Honduras (APHIS, 2000b):
None.

4. Pest Categorization

The names of pests that have been reported in the scientific or regulatory literature (as listed in the Literature Cited section) on parsley in El Salvador and Honduras are recorded in Table 2. Table 2 also presents information about geographic distribution, host associations and regulatory data. Table 2 represents a “master list” of these organisms and serves as a basis for selecting them for more detailed biological analysis.

Table 2. Pests Associated with *Petroselinum crispum* from El Salvador and Honduras

Pest Name (Order: Family)	Geographic Distribution[1]	Plant Part Affected [2]	Quarantine Pest[3]	Likely to Follow Pathway[3]	References
ARTHROPODS					
Agrotis segetum Denis & Schiffermüller[4] (Lepidoptera: Noctuidae)	HO	L, S, W	Y	Y	CABI, 2000; IIE, 1987; Salgado-Cambar, 2000
Bemisia sp. (Homoptera: Aleyrodidae)	HO	L	Y	Y	Salgado-Cambar, 2000
Chaetanaphopthrips orchidii (Moulton) (Thysanoptera: Thripidae)	HO, US	L, Fw, S	N	Y	CABI, 2000; Hill, 1994; IIE, 1988; Salgado-Cambar, 2000
Diabrotica balteata Leconte (Coleoptera: Chrysomelidae)	HO, US	L, R	N	Y	Maes and Staines, 1991; McGuire and Crandall, 1967
Listronotus oregonensis Leconte (Coleoptera: Curculionidae)	HO, US	L, R	N	Y	CABI, 2000; O'Brien, 1977; Salgado-Cambar, 2000; Whitcomb, 1965
Myzus persicae (Sulzer) (Homoptera: Aphididae)	ES, HO, US	L, S	N	Y	CABI, 2000; Hill, 1994; IIE, 1979; Metcalf and Metcalf, 1993
FUNGI					
Alternaria dauci (Kühn) Groves and Skolko (Deuteromycotina: Hyphomycetes)	ES, HO, US	L	N	Y	ARS, 1960; ARS, 2000; CABI, 2000
Cercospora apii Fresen (Deuteromycotina: Hyphomycetes)	ES, US	L	N	Y	ARS, 2000; Crandall *et al.,* 1951

Table 2. Pests Associated with *Petroselinum crispum* from El Salvador and Honduras					
Pest Name (Order: Family)	Geographic Distribution[1]	Plant Part Affected [2]	Quarantine Pest[3]	Likely to Follow Pathway[3]	References
Erysiphe heraclei DC (Pyrenomycetes: Erysiphales)	HO, US	L	N	Y	ARS, 2000; Salgado-Cambar, 2000
Fusarium oxysporum Schlechtend.:Fr. (Deuteromycotina: Hyphomycetes)	HO, US	W	N	Y	ARS, 2000; Salgado-Cambar, 2000
Leveillula taurica (Lév.) G. Arnaud (Pyrenomycetes: Erysiphales)	HO, US	L	N	Y	ARS, 2000; CABI, 2000; CMI, 1984
BACTERIA					
Pseudomonas cichorii (Swingle) Stamp (Pseudomondales: Pseudomonaceae)	HO, US	W	N	Y	ARS, 1960, 2000; Bradbury, 1986; Salgado-Cambar, 2000

[1]ES = El Salvador, HO = Honduras, US = United States
[2]L = Leaves, S = Stems, W = Whole plant, F = Fruit, Fw = Flowers
[3]Y = Yes, N = No
[4]Reported in the correspondence (Salgado-Cambar, 2000) but not confirmed by a literature search.

The absence of taxonomic information at the species level makes a biological risk evaluation difficult. Consequently, *Bemisia* sp. was not analyzed further. However, the absence of specific biological information should not be equated with low risk and any pest species listed as a "Y" is considered a quarantine pest if found on imports of *Petroselinum crispum* (parsley) from El Salvador or Guatemala. Should such a pest be found on commercial or any other shipments, quarantine action will be taken. A pest listed as "N" in the "Quarantine Pest" column is not a quarantine pest.

Only quarantine pests that have both a "Y" in the "Likely to Follow Pathway" and "Quarantine Pest" columns were selected for further analysis in Tables 3, 4 and 5 (USDA, 2000a).

5. Consequences of Introduction

One quarantine pest from Table 2 is considered for further analysis according to the five risk elements (RE) described in the Guidelines (USDA, 2000a).

Table 3. Risk Rating for Consequences of Introduction

Pest Species	RE #1 Climate/host Interaction	RE # 2 Host Range	RE #3 Dispersal Potential	RE #4 Economic Impact	RE #5 Environmental Impact	Cumulative Risk Rating
Agrotis segetum	High 3	High 3	High 3	High 3	Medium 2	High 14

6. Likelihood of Introduction

The ratings for the six sub-elements (S-E) of risk element concerning the "Likelihood for Introduction" are shown in Table 4.

Table 4. Risk Rating for Likelihood of Introduction

Pest Species	S-E #1 Quantity imported annually	S-E #2 Survive post-harvest treatment	S-E #3 Survive shipment	S-E #4 Not detected at port of entry	S-E #5 Moved to a suitable habitat	S-E #6 Contact with host material	Cumulative risk rating
Agrotis segetum	Medium 2	Medium 2	High 3	Medium 2	High 3	High 3	High 15

7. Conclusion/Pest Risk Potential: Pests Requiring Phytosanitary Measures

The pest risk potential rating for the pest listed in Tables 3 and 4 is shown in Table 5.

Table 5. Pest Risk Potential

Pest Species	Consequences of introduction. (Cumulative Risk Rating)	Likelihood of Introduction (Cumulative Risk Rating)	Pest Risk Potential
Agrotis segetum	High 14	High 15	High 29

Pest Risk potential ratings have the following suggested meanings (USDA, 2000a):

"Low: Pest will typically not require specific mitigation procedures. The port-of-entry inspection to which all imported commodities are subjected can be expected to provide sufficient phytosanitary security.
Medium: Specific phytosanitary measures may be necessary.
High: Specific phytosanitary measures are strongly recommended. Port-of-entry inspection is not considered sufficient to provide phytosanitary security."

As stated in the Guidelines (USDA, 2000a), a detailed examination and choice of appropriate sanitary and phytosanitary measures to mitigate pests risk for pests with particular pest risk potential scores or ratings is undertaken as part of the pest risk management phase and is not discussed in this document. The appropriate risk management strategy for a particular pest depends on the risk posed by that pest. APHIS risk management programs are risk based and their nature depends on the availability of appropriate methods.

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